AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

Claim 1 (currently amended): A diamond electron emission device comprising a light emitting device for irradiating light to a cathode, wherein at least an electron emission face of said cathode is made of diamond and the light emitting device comprises ~~emits light from~~ a junction formed between the cathode and another element of the electron emission ~~light emitting~~ device.

Claim 2 (original): A diamond electron emission device according to claim 1, wherein said light emitting device is made of diamond.

Claim 3 (previously presented): A diamond emission device according to claim 1, wherein said electron emission face of said cathode is an n-type diamond semiconductor.

Claim 4 (previously presented): A diamond emission device according to claim 1, wherein said electron emission face of said cathode is a p-type diamond semiconductor.

Claim 5 (original): A diamond electron emission device according to claim 4, wherein said p-type diamond semiconductor includes crystal defects or an sp2 component.

Claim 6 (previously presented): A diamond electron emission device according to claim 1, wherein said electron emission face of said cathode is hydrogen terminated.

Claim 7 (previously presented): A diamond electron emission device according to claim 1, wherein said electron emission face of said cathode is oxygen terminated.

Claim 8 (previously presented): A diamond electron emission device according to claim 1, wherein said light emitting device is composed of a pn junction of diamond, a schottky junction or a MIS structure.

Claim 9 (previously presented): A diamond electron emission device according to claim 1, wherein said electron emission face of said cathode contains a sharpened projection part.

Claim 10 (previously presented): A diamond electron emission device according to claim 1, wherein wavelength energy of light emitted from said light emitting device includes 5.0 - 5.4 eV.

Claim 11 (previously presented): A diamond electron emission device according to claim 1, wherein wavelength energy of light emitted from said light emitting device is equal to or greater than 2.0 eV.

Claim 12 (previously presented): A diamond electron emission device according to claim 1, wherein light from said light emitting device excites electrons in an impurity level to a conduction band.

Claim 13 (previously presented): A diamond electron emission device according to claim 1, wherein light from said light emitting device excites electrons in a band gap level to a conduction band.

Claim 14 (previously presented): A diamond electron emission device according to claim 1, wherein light from said light emitting device excites electrons in a level resulting from any of following components of p-type diamond: graphite; non-crystalline carbon; diamond-like carbon; fullerene; lattice defect; dislocation defect or grain boundary defect, to a conductive band.

Claim 15 (original): A diamond electron emission device according to claim 3, wherein said n-type diamond contains as an impurity at least one element among nitrogen, phosphorous, sulfur and lithium, or any one of said elements and boron.

Claim 16 (previously presented): A diamond electron emission device according to claim 1, wherein said light emitting device is composed as one unit with said cathode.

Claim 17 (currently amended): An electron beam source utilizing a diamond electron emission device, wherein a light emitting device for irradiating a cathode and a cathode, in which at least an electron emission face is diamond, are disposed together in an electron gun, wherein the light emitting device comprises ~~emits light from~~ a junction formed between the cathode and another element of the electron emission ~~light emitting~~ device.

Claim 18 (original): An electron beam source utilizing a diamond electron emission device according to claim 17, wherein:

an anode is separated by a space from said cathode, in which at least an electron emission face is diamond; and

a voltage that is positive relative to said cathode is applied to said anode.

Claim 19 (original): An electron beam source utilizing a diamond electron emission device according to claim 18, wherein a control electrode is disposed between said cathode and said anode to regulate an emission electron current from said cathode.

Claim 20 (previously presented): A diamond electron emission device according to claim 1, wherein said cathode comprises an n-type diamond and said other element comprises a p-type diamond.

Claim 21 (previously presented): A diamond electron emission device according to claim 1, wherein said cathode comprises a p-type diamond and said other element comprises an n-type diamond.

Claim 22 (previously presented): A diamond electron emission device according to claim 1, wherein said cathode comprises a p-type diamond and said other element comprises a schottky electrode.

Claim 23 (canceled).

Claim 24 (canceled).